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Focal Plane Detector Tracker with Optical Read-Out for the NUMEN experiment

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The preliminary study of a solution for the optical detection and tracking of ions in the NUMEN FPD is presented. Detailed Geant4 simulation of the light generated by the ions traversing a scintillation high pressure gas are correlated to the geometry and read-out strategy of a full optical tracker. Arrays of SiPM, suitably arranged around the tracks, perform imaging of the track allowing high event rate and higher gas pressure. This last, in turn, allows the measurement of the energy deposited in the gas by the ions. This simulation platform will help to define all the parameter of the detector and will be the basis for the design and comparison of data to simulations.

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